tion of tobacco; the use of very little water; the quiet seclusion enforced; and the entire absence of all alcoholic stimulants and substitutes for them, rather than to any special difference in the medicinal remedies employed.

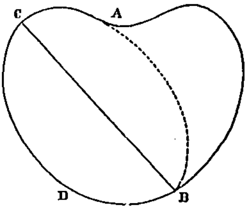
It is impossible to treat inebriates by any routine system, as their cases vary as much as their respective peculiarities of mind and character. All we can do is to establish certain principles of treatment, and then manage each case according to the peculiar conditions which present themselves. We do not propose to make an inebriate perfectly sound and well in all respects in a week. Many do claim that they feel so, and it is remarkable in view of their former habits how much changed they become in a few days; but it stands to reason that the perfect integrity of the nervous system can only be recovered, after the trials it has endured, by a slow and gradual process of restoration, occupying weeks or months according to the peculiarities of each individual case. When we contrast our success of to-day in the treatment of mania-à-potu with what it was twenty years ago when stimulants and opium were the chief remedies, and when we sometimes met with cases in which both were contra-indicated by the condition of the brain, we cannot be too thankful that chemical experiment and clinical research have given us in the bromides, and hydrate of chloral such active agents, and especially the former, and discovered their value in the class of cases which has been the subject of this paper. We do not think there is any diseased condition of system in which bromide of potassium and sodium have such a marked influence for good, as in that which results directly from the poisonous effect of alcohol. But it is a mistake to rely too much upon them, and thus perhaps lose sight of the great importance of a proper supporting treatment. After the thirst for water subsides, there is no drink better adapted to remove any craving that may remain for alcohol than milk, and this is often resorted to by our walking cases, of their own option. The various minor sequelæ of inebriety must be treated with quinia, iron, etc., according to their respective characters, but no tinctures or elixirs should be employed in any case. Renal disorders are quite common, but seldom serious or persistent, and yield readily to treatment based upon analysis, as soon as the system is properly restored by the effects of nutritious diet.

ART. VII.—*A Study of the Female Pelvis.* By H. G. LANDIS, A.M., M.D., of Niles, Ohio. (With four wood-cuts.)

THE motion of the fœtal head through the pelvis is generally spoken of as a spiral movement. The true cause of this does not seem to be so thoroughly recognized, although the general mechanical principles which govern it are correctly laid down in most text-books. Greater simplicity is still desirable, which the following proposition and deduction will in part furnish, if correct.

As at present studied, the pelvis is a canal of irregular shape. If we can by analysis resolve it into regular elements, we shall have made a great step towards simplifying the subject; to which end this proposition is laid down. The female pelvis is essentially a duplex spiral canal; *i. e.*, it consists of two canals having each a slightly spiral course, which, partially separate at their beginning, are merged into one about the level of the ischiatic spines. Transverse sections of these canals show an elliptical form. The superior strait is said by Hodge to be bounded by the inner margin of the tuberosity of the pubes on either side, the spinous process, the linea ileopectinea, the inner margin of the ala of the sacrum, and the sacral promontory. Now, no plane surface can be made to pass through these points. For, as we may readily observe, the inner margins of the sacral alæ, when prolonged forward into the promontory, intersect in an angle of at least 15°, and the promontory is above the level of any two similar points taken on opposite sides of the brim. If a rule be held so that the extremities reach from one linea ileopectinea to the other, and another be extended from the promontory to the pubes, there will be found an interval between the planes of these lines of not less than three-fourths of an inch. But if we carry a plane through the points given above, only on one side, and prolong the bounding by an imaginary curved line, we shall have an elliptical plane which shall truthfully represent one side or element of the pelvic brim. And the same procedure on the opposite side will complete the survey.

Fig. 1.



The superior strait, therefore, consists of two distinct planes which intersect one another and have elliptical boundaries; as will be better shown by a diagram. Here (Fig. 1) is an outline of the pelvic brim, carefully reduced. The diameters of the original are—transverse 5¾ inches, oblique 5½ inches, conjugate 4¼ inches. If we draw a curved line from A to B, it will complete an ellipse A D, and by drawing another from A to D, we should have another ellipse. The long diameter of either ellipse extends from the sacro-iliac symphysis to a point above the obturator foramen, which happens to be the oblique diameter as given by Meadows, though not the one usually so regarded. The diameter B C is less than the received oblique diameter by about a fourth of an inch, but at a trifle below the plane of the strait this difference is equalized. These ellipses are of similar shape to the fœtal head, and are the planes of the entrances to the two canals. It is obvious that these figures are geometrically similar. For convenience, therefore, we will speak of but one, viz., the left. Let a sheet of paper be cut so as to fit this ellipse, and, turning it through an arc of 45° to the right, let it be placed in the plane of the inferior strait. There will be found a striking correspondence. The chief difference will be in the short diameter, which is widened by the outward flare of the ischial tuberosities. Here then the canals merge, and the arc of 45° is the measure of the spirality of the course. These facts are patent to the eye.

To complete the description, sections of pelvic casts are necessary. These are difficult to make, and when made require considerable trimming owing to the various apertures of the pelvis. There is danger of carrying this to too great an extent. To show the spirality of the intervening canal, I will, therefore, mainly rely on sections made for a different purpose, and which are delineated in Plate III., Figs. 19, 20, 21, of Hodge's great work, to which the reader is referred, and from which I take these diagrammatic representations of this fact—that the chords of the lateral inclined planes form a constantly lessening angle with the plane of the conjugate diameter as they descend. Figs. 2, 3, and 4 represent the chords of the lateral inclined planes at the first, second, and third parallels respectively. As the whole spirality is only through one-eighth of a circle, and the depth of the anterior portion is so slight, we would not expect to find this fact in a marked degree in the antero-lateral planes, but the posterior planes, governing a course of much greater length, do show it very plainly, as may be seen by measuring the angles. This diminution of the angle continues until, as we have seen, the long diameter of the elliptical section has become coincident with the conjugate diameter of the inferior strait. It is difficult to demonstrate this continued spirality by any other means. In a view of a cast of the bony pelvis, the aspect is confused from the interfusion of the canals and the raggedness of the cast due to the incompleteness of the bony framework. This may be partially avoided by closing the sacro-sciatic notch by pasting a piece of paper across it before making the cast. A photographic profile will then show very well the separate direction of the canals and their fusion below the ischiatic spines.

Fig. 2.

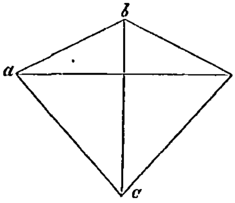


Fig. 3.

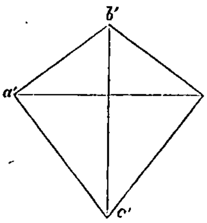
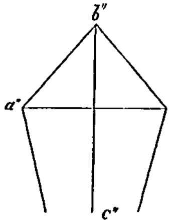


Fig. 4.



So far we have seen nothing which would conflict with existing views of the mechanism of labour; for it is evident that all parts of the spirals are not equally efficient mechanical factors in determining the direction of the passing head. The point of junction is the most significant, and the ischial spines are truly the "keys of the pelvis." A consideration of the axes of the pelvis will, however, bring us upon new ground. As already stated, the superior planes of these canals make, with the assumed and artificial plane of the superior strait, angles of about 15°. Their axes have, therefore, a similar inclination to the axis of that strait; which inclination becomes less until at the inferior strait there is but one axis. Does the head then enter the pelvis with its bi-parietal diameter corresponding to the superior plane of its respective canal, and therefore obliquely to the plane of the superior strait? So Naegele taught, and so I believe, but only so far, for there is abundant evidence that from this point, the bi-parietal diameter is oblique to the real planes of the spiral, and synclitic with the artificial parallel planes. This may be, to a great extent, explained by observing the greater resistance the head meets with anteriorly.

In a left occipito-anterior position the left parietal boss is comparatively unobstructed in its descent, while the resistance to the right boss is considerable. Thus the tendency is to depress the left side of the head, which, opposing the original obliquity in the opposite direction, brings about a synclitism to the artificial parallel planes. The direction of the head in the upper part of its course is downwards, backwards, and slightly inwards, following the spiral axis until at or near the inferior strait it ceases to be spiral. This lateral movement inwards is naturally obscured by the simultaneous rotation of the head and consequent difficulty of determining the axial motion, but is sufficiently obvious, when looking at the whole pelvis, we see the marked difference between the transverse diameters of the superior and inferior straits. The so-called axis of the superior strait and of the whole upper pelvis is therefore artificial and useless, having no relation to the course of the head.

The importance of recognizing this fact is evident in the use of the forceps. In making traction with these instruments I have frequently noticed the fact of the lateral movement of the head, and that traction in the direct axis of the whole brim is often insufficient until supplemented by traction in the real axis of the canal in which the head is placed. This clinical fact probably suggested the common advice of obstetrical teachers to combine with traction a to-and-fro lateral movement. But it is with reference to the complete adaptation of the pelvis to the fœtus that its double character is most plainly seen to be both ingenious and necessary. The long diameter of the child's shoulders is at a right angle with the antero-posterior diameter of its head, and the long diameters of these canals at their origin are nearly at a similar angle to each other. It is therefore necessary that there should be two canals until the head has reached the more spacious region below the inferior strait. The economy of room in their union is a perfect adaptation of means to an end. Furthermore, by this contrivance the facilities for the passage of the head in a favourable or occipito-anterior position are greatly increased. If the body of the child be so held in the womb that its back is to the mother's left side, the head may enter either canal; the left canal with the occiput anteriorly, or the right with the occiput posteriorly. If its back be towards the mother's right side, the positions are reversed. If its back be toward the mother's abdomen, it must of necessity take an occipito-anterior position, and in one event only, when the child's back is towards the mother's back, there is no escape from an occipito-posterior position. It is evident that, except in the latter instance, the rotation of an occipito-posterior position at the brim into the opposite canal would change it into an anterior position. The mechanism of these changes does not properly come within the scope of this study, and must be for the present dismissed. It is, then, not without reason that the tendency to diminish the number of normal cranial positions has grown with an increasing knowledge of the pelvic anatomy. Leishmann recognizes but four positions, a view which receives further warrant from this standpoint.

NILES, OHIO, Nov. 1875.

ART. VIII.—*On the Surgical Anatomy of the Tibio-Tarsal Articulation, with special regard to Amputations at this joint, as deduced from* 80 *consecutive dissections.* By JOHN A. WYETH, M.D., Assistant to Chair of Anatomy, Bellevue Hospital Medical College,[1] New York. (With a wood-cut.)

IN both the amputations at the *tibio-tarsal* articulation (Syme's and Pirogoff's), surgeons agree that the perfect success of the operation depends upon the vitality, *i. e.*, the non-interference with the blood-supply of the inferior or calcanean flap.

Descriptive and surgical anatomists and operative surgeons agree, with remarkable unanimity, that the integrity of this flap is dependent upon its blood supply, partly from the *anterior and posterior peroneal* arteries on the outer side, but principally from the *calcanean* branches of the *posterior tibial* on the inner side of the ankle-joint.

In reference to this, Gross says: "Care should be taken not to wound the *posterior tibial* prior to its separation into its *plantar* branches, otherwise sloughing of the soft parts might ensue from deficient nourish-

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[1] This Essay was awarded the annual prize of One Hundred Dollars, offered by Prof. James R. Wood, of New York City, to the Alumni of the Bellevue Hospital Medical College, for "the best essay on any subject connected with Surgical Pathology or Operative Surgery." (Feb. 1876.)